Ultrasonic Flow Sensors soniQ®

SIKA USA Inc.

Series VUS

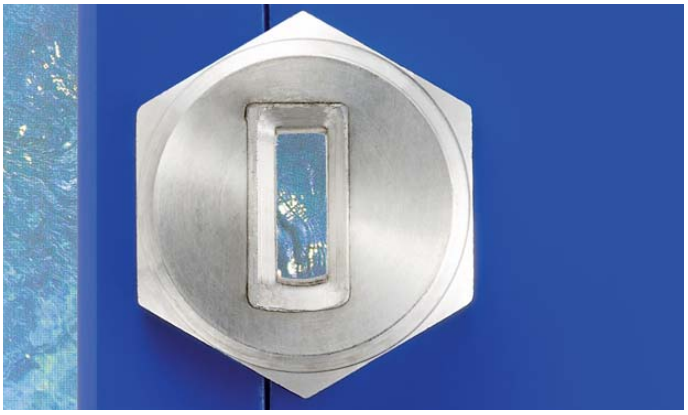
Just a straight pipe

Flow measurement without moving parts

The **soniQ®** from SIKA is an solid state flow sensor. The medium just flows through a straight stainless steel pipe. Nothing extends into a measuring pipe. The ultrasonic transducers are positioned on the outer surface of the pipe and therefore not in contact with the medium.

Exceptional features of **soniQ®**:

- No moving parts
- Only one wetted material, chemically resistant (stainless steel)
- No mechanical wear
- Three output signals
  - frequency output
  - analog output 4...20 mA
  - alarm output
- Independent of pipe and installation position
- Suitable for electrically non-conductive liquids, e. g. DI water
- Fast response
- Air detection
- Insensitive against pressure peaks and particles in the medium because of protected transducers
- Customised set-up on request



Typical application areas

soniQ® is the ideal flow sensor for interference free operation combined with a long-life cyle.

soniQ® can be used in areas where flow sensors with moving parts cannot be applied, e. g. paddle wheel sensors.

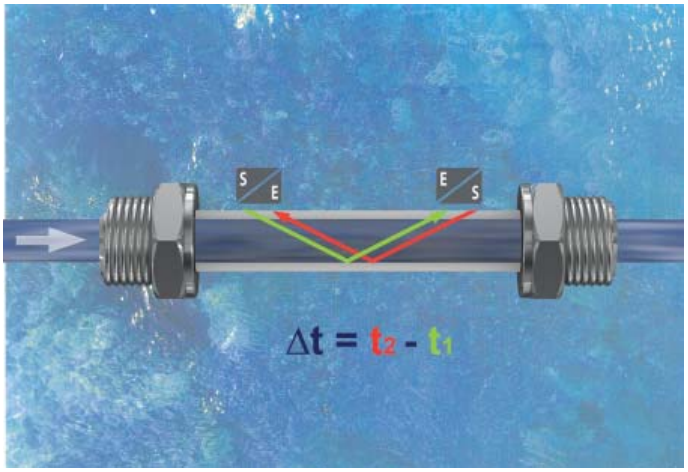
The wide independence to the inlet and outlet pipes creates the advantage to be able to install **soniQ®** even in compact machines with cramped confines.

Operational principle

Ultrasonic flow metering is a method to measure flow rates without any moving parts.

soniQ® operates on the transit time principle:
Two ultrasonic transducers are positioned on the outer surface of the measuring pipe. These transducers are used alternately as transmitter (S) and receiver (E). Thus the sonic signal is transmitted in the flow direction (➔) and reverse to the flow direction (🡐).

The difference of both transit times (Δt) is proportional to the average flow velocity.



Materials

Process connections	Stainless steel 316L
Measuring pipe	Stainless steel 316L
Housing	Aluminium casting

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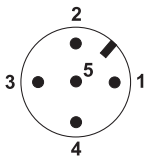
Technical data

Flow range	0.4...8 GPM
Accuracy*	0.8...8 GPM ±4 % of reading 0.4...0.8 GPM ±8 % of reading
Signal output starting from	0.26 GPM
Max. flow rate	8.7 GPM
Repeatability	1 %
Medium	Water and aqueous solutions
Medium temperature	41...140 °F
Ambient temperature	41...140 °F
Nominal pressure	145 psi
Diameter	3/8“
Process connection	1/2“ NPT male thread or 3/4“ NPT male thread
Flow indication / alarm indication	LED green / red
Output signals	
Frequency output signal	
• Pulse rate	3,237 pulses/Gal (factory setting in the range of 1...11,500 pulses/Gal)
• Signal shape	Square wave signal NPN or PNP open collector (factory setting)
• Signal current	max. 100 mA, short-circuit-proof
• Max. pull-up voltage	30 VDC
Analog output signal	4...20 mA acc. NAMUR NE43, max. burden = $\frac{(+U - 10\ V)}{23\ mA}$
• Flow or	0...8 GPM, others on request or
• Temperature	32...140 °F, others on request (accuracy ±0,5 K)
Alarm output signal	- Alarm in case of lack of flow or air in the pipe - PNP open collector, max. 100 mA short-circuit-proof - 16 different set points selectable with rotary switch
Electrical data	
Electrical connection	5 pin plug connector M12x1
Power supply	10...30 VDC
Current consumption	Max. 80 mA
Electrical protection measures	Short-circuit proof (up to 30 V) and polarity protection (up to -30 V)
Protection class	IP 54



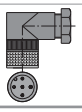
PIN 1: +U
PIN 2: alarm output PNP
PIN 3: GND
PIN 4: frequency
PIN 5: 4...20 mA

* Water 86 °F

Order code

		Order no.		
Frequency output signal	PNP open collector NPN open collector	VU14VP VU14VN		
Analog output signal	flow 0...8 GPM temperature 32...140 °F		C1BAAB C1BAA2	
Process connection	1/2“ NPT male thread 3/4“ NPT male thread			540 560

Accessory

Accessory part	Length	Order code	
Connection cable with 5 pin cable socket M12x1, angle type molded cable, sheathing material PUR, screened, (T_{max} = 176 °F) UL-approval	9.8 Ft 16.4 Ft 32.8 Ft	XVUS055 XVUS057 XVUS058	
5 pin cable socket M12x1 angle type unassembled		XVUS056	

Set point table for the alarm output

Switch position	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Set point decreasing flow (GPM)	0.5	0.75	1	1.25	1.5	1.75	2	2.3	2.6	3	3.5	4	4.5	5	5.5	6
Set point increasing flow	0.15 GPM above the set point decreasing flow															

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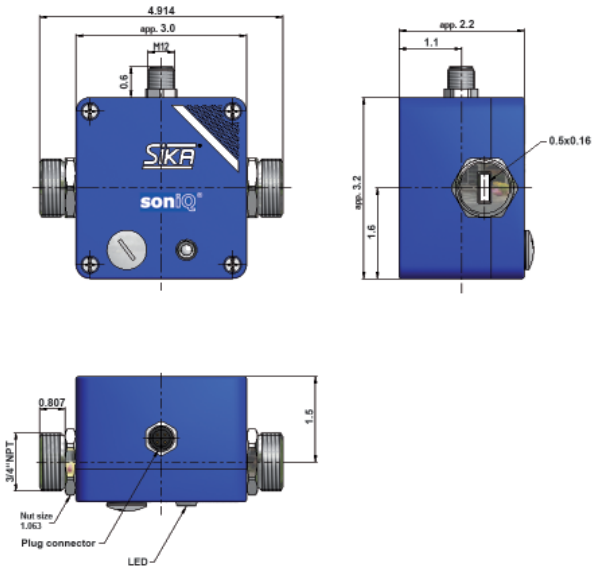
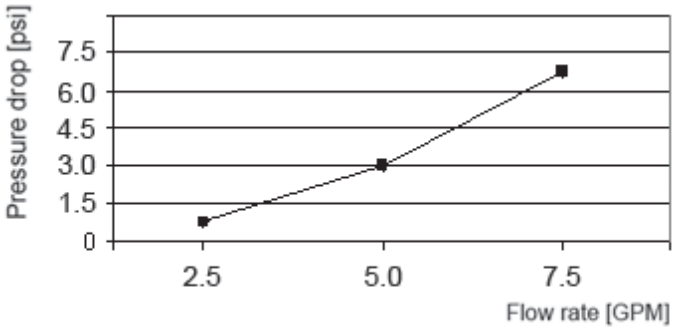
Dimensions



Pressure drop



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Subject to technical modification

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